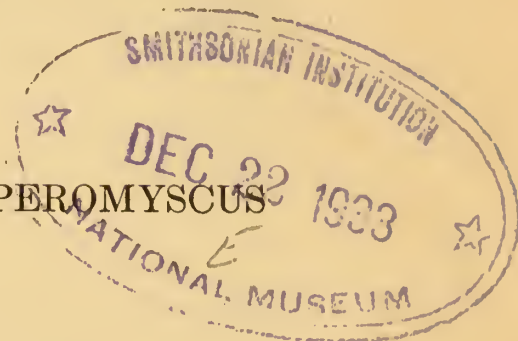


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

FIVE NEW MAMMALS OF THE GENUS *PEROMYSCUS*
FROM EL SALVADOR.¹

BY DONALD R. DICKEY.



Our present work with the birds and mammals of El Salvador, Central America, was initiated many years ago under private auspices, when A. J. van Rossem made his first expedition to El Salvador for the purpose of collecting birds for A. Brazier Howell. The work was returned to seriously in the early summer of 1925, when Mr. van Rossem returned to the Republic on a second expedition. On this trip he was accompanied by R. A. Stirton, as mammalogist, in order that both birds and mammals might be studied in the field, and adequate material secured. The third expedition, made with the support and encouragement of the California Institute of Technology, was initiated by Mr. Stirton, who returned to El Salvador in November, 1926, accompanied by his cousin, George D. Stirton, as his assistant. Mr. van Rossem rejoined the Stirtons in January, 1927, and field work was continued in the Republic until the early summer of that year.

It is our intention to carry the work, thus begun, through to its logical conclusion, a report on the birds and mammals of El Salvador being in preparation. Meantime, this is the first of three descriptive papers dealing with the few Salvador mammals which appear to be new. The genus *Peromyscus* is taken up in the present paper.

The 360 specimens of *Peromyscus* procured in El Salvador by Mr. Stirton on his two expeditions divide naturally into three lots. The first of these is obviously of the *boyliei* group; the second includes a chain of geographic races of the species *mexi-*

¹Contribution from the California Institute of Technology.

canus; while the third consists of a series of specimens which, although allied to the *mexicanus* group, is nevertheless so distinct as seemingly to represent a hitherto undescribed species not closely related to any known form.

Taking up this material in order and attacking the *boylei* group first, it seems necessary to describe the following forms of this species.

***Peromyscus boylei cordillerae*, subsp. nov.**

MT. CACAGUATIQUE WHITE-FOOTED MOUSE.

Type.—Female (old adult); no. 10,716, collection of Donald R. Dickey; Mt. Cacaguatique, Dept. San Miguel, El Salvador, C. A.; altitude 3,500 feet; "mountain canyon slope—oaks"; November 24, 1925; collected by R. A. Stirton.

Characters.—Size rather large for the group. Color deep, rich tawny in fresh pelage. Hind feet almost wholly white. Skull large (long and rather narrow), with rostrum and nasals particularly produced; molar teeth heavy; audital bullae small.

Color.—This is one of the chain of richly colored races which the *boylei* stock has developed in Central America. Similar in general to *Peromyscus boylei aztecus* (Saussure), which it closely resembles, but with color a trifle less deep and rich a shade of tawny, and hind feet wholly white from just below the tarsal joint to the claws (largely dusky in *aztecus*, and strikingly so in *Peromyscus boylei evides* Osgood). Upper parts with considerable admixture of dusky hairs concentrated chiefly in a broad dorsal band. Ears rather small, as is usual in the species (average 15 mm. in the flesh). Tail bicolor, but thinly haired and therefore not conspicuously contrasted; annulations 17 per cm. at middle. Pectoral spot present or absent. Orbital ring and spot at base of whiskers black and strongly marked. Differs from *Peromyscus boylei levipes* Merriam, as judged by the type and 3 topotypes of the latter, which I have been privileged to examine in the Biological Survey collection, U. S. National Museum, in totally different tone of coloration, *levipes* being a grayish and buffy animal, strongly reminiscent of the northern form *Peromyscus boylei rowleyi* (Allen), and not even remotely like the present rich, deep tawny animal. Differs from *evides* in darker and richer tawny coloration, and in having the feet white. Very similar to the long-furred high mountain animal *Peromyscus oaxacensis* Merriam in color, but differing in smaller size throughout.

Measurements of type.—Total length, 248 mm.; tail, 132; hind foot, 25; ear, 15. Skull: greatest length, 31.5; zygomatic breadth, 16.0; inter-orbital constriction, 4.9; length of nasals, 13.0; shelf of bony palate, 5.0; palatine foramina, 6.4; maxillary tooth row, 4.9 (very worn).

Range.—Slopes and high ravines above 3,500 feet altitude, and among the grass and oaks, on Mt. Cacaguatique, El Salvador. Sonoran Zone.

Specimens examined.—Type and 39 topotypes.

***Peromyscus boylii sacarensis*, subsp. nov.**

SAN JOSÉ DEL SACARE WHITE-FOOTED MOUSE.

Type.—Male adult; no. 12,722, collection of Donald R. Dickey; San José del Sacare [San José del Sacario of maps], Dept. Chalatenango, El Salvador, C. A.; altitude 3,600 feet; "caught in dry ravine in oaks"; March 15, 1927; collected by R. A. Stirton.

Characters.—One of the smallest of the Central American forms of this species. Color much as in topotypes of *levipes*; ochraceous buff sparingly interspersed with dusky, instead of rich tawny as in *cordillerae*. Hind feet wholly white. Skull small, light, weak and narrow throughout, with smoothly-rounded braincase and supraorbital border. Rostrum short and weak. Bullae rather small; about as in *cordillerae*; much smaller than in the type of *levipes*. Maxillary tooth row weak and short.

Color.—This form is a moderately colored race of *boylii*, much less rich than *cordillerae*, from which it further differs in having the tail lighter both above and below and more distinctly bicolor; annulations 16 per cm. at middle (type). The white feet will serve to distinguish it externally from *evides*, while its cranial characters easily separate it from typical *levipes*.

Skull.—Cranially, small size instantly differentiates *sacarensis* from *cordillerae*, *oaxacensis* and *evides*. From *levipes*, in typical form, it is distinguished by smaller, narrower and lower braincase; by smaller bullae; and by shorter tooth row. From *Peromyscus boylii simulus* Osgood of the coast of Tepic and Sinaloa, which it resembles in general size, it differs in having a narrower and less angular skull, with lighter rostrum.

Measurements of type.—Total length, 200 mm.; tail, 103; hind foot, 23; ear, 16. Skull: greatest length, 27.1; zygomatic breadth, 13.4; interorbital constriction, 4.2; length of nasals, 10.5; shelf of bony palate, 4.4; palatine foramina, 5.4; maxillary tooth row, 4.1 (worn).

Range.—Taken only at the type locality, among oaks and scattering pines, in dry ravines, and under fern cover, at an altitude of 3,600 feet. Sonoran Zone.

Specimens examined.—Type and 15 topotypes.

Throughout most of El Salvador *Peromyscus mexicanus saxatilis* Merriam is the race representing the species *mexicanus*. At high altitudes in the northwest corner of the country, however, a large, mountain form of the species occurs, which it seems necessary to describe. Another race of the same species is found in the eastern part of the Oriente. These two apparently new races may be known as follows:

***Peromyscus mexicanus philombrius*, subsp. nov.**

LOS ESESMILES WHITE-FOOTED MOUSE.

Type.—Female (very old adult); no. 12,519, collection of Donald R. Dickey; Los Esesmites, Dept. Chalatenango, El Salvador, C. A.; altitude,

8,000 feet; "caught under large log in oak rain forest"; February 12, 1927; collected by R. A. Stirton.

Characters.—Size very large for the species. Indistinguishable in color from *saxatilis*, which it approaches closely in all external and cranial characters, save in its larger size and decidedly longer tail. Distinctly lighter than *Peromyscus mexicanus totontepecus* Merriam, the only other race of this species which attains the size of *philombrius*. Tail proportionally long for the species; annulations 15 per cm. at middle in the type. Skull as in *saxatilis*, but slightly larger throughout. Supraorbital border moderately sharp-angled, but with no trace of beading.

Measurements of type.—Total length, 285 mm.; tail, 152; hind foot, 29; ear, 21. Skull: greatest length, 35.0; zygomatic breadth, 16.0; interorbital constriction, 5.4; nasals, 14.0; shelf of bony palate, 5.2; palatine foramina, 7.7; maxillary tooth row, 4.9 (very worn).

Range.—The rain forest above 8,000 feet on the range of mountains known as Los Esesmites, Chalatenango, El Salvador.

Remarks.—The present race is simply a large, high mountain form of *mexicanus* closely allied to *saxatilis*, but differing so constantly in size as to require formal recognition. The type is an old individual with exceedingly worn teeth. It therefore seems probable that it approaches nearer to the maximum of the race than to the mean. From the other large species of Central American *Peromyscus*, with which it might be confused because of size, it is differentiated as follows: It approaches *guatemalensis* in size and equals *nudipes* and *furvus*, but is instantly separable from each of them by reason of its lighter color, and shorter pelage, with no trace of 'wooliness.' Its unbeaded skull, without even trenchant-angled supraorbital shelves, distinguishes it instantly from all members of the *melanophrys* and *megalops* groups except *zarhynchus*. The tremendous size of the latter alone serves to set it off.

Specimens examined.—The type and 35 topotypes.

***Peromyscus mexicanus salvadorensis*, subsp. nov.**

SALVADOR WHITE-FOOTED MOUSE.

Type.—Female (old adult); no. 10,748, collection of Donald R. Dickey; Mt. Cacaguatique, Dept. San Miguel, El Salvador, C. A.; altitude 3,500 feet; "in ferns near waterfall"; November 28, 1925; collected by R. A. Stirton.

Characters.—Similar to *saxatilis*, but averaging darker with dark hairs more generally distributed over back, face and sides, submerging the buff almost entirely in mass effect, and giving a dark, hard, buffy-gray tone to the series, instead of the ochraceous or cinnamon-rufous tone of the average series of true *mexicanus* or *saxatilis* in equally fresh pelage. Brown pectoral spot generally present. Skull smaller than in *saxatilis* with shorter average nasals and rostrum, slightly smaller molar teeth and small audital bullae, as in *mexicanus*. Supraorbital borders sharp-angled, but not beaded. Tail generally longer than head and body; thinly haired;

dusky above, and blotched irregularly with yellowish white below; annulations 19 per cm. at middle. Broad black orbital ring and whisker patch present, and sometimes almost confluent. Dark wedge of color extends below tarsal joint and well down on upper side of foot. Ears moderate and almost naked; apparently smaller than in *saxatilis*.

Measurements of type.—Total length, 220 mm.; tail, 119; hind foot, 25; ear, 16. Skull: greatest length, 31.2; zygomatic breadth, 15.1; inter-orbital constriction, 5.2; length of nasals, 12.2; shelf of bony palate, 4.4; palatine foramina, 6.4; maxillary tooth row, 4.4 (very worn).

Range.—Shaded ravines and damp jungle growth on Mt. Cacaguatique, El Salvador, at altitudes ranging from 3,500 to 4,000 feet, and in dry stream beds, brush, and even up into the pines on the nearby Pine Peaks, Volcan Conchagua, at from 3,300 to 3,500 feet. Upper Tropical Zone.

Remarks.—*Saxatilis*, in apparently typical form, extends southeast from central Guatemala on the Atlantic side of the backbone of the Cordillera at least as far as north-central Nicaragua, so that Allen's name "*nicaraguae*" has no application in the present connection, but remains a strict synonym of *saxatilis*.

The four forms described above ally themselves naturally and easily with one or the other of the widely distributed species of which they have been named as local races. The most interesting series of the genus secured by Mr. Stirton, however, could not be allocated to any one group with certainty, and it finally developed that we were dealing with an apparently new species, which is described as follows:

***Peromyscus stirtoni*,¹ sp. nov.**

STIRTON'S WHITE-FOOTED MOUSE.

Type.—Female (old adult); no. 10,634, collection of Donald R. Dickey; Rio Goascoran, 13° 30' N., Dept. La Union, El Salvador, C. A.; altitude 100 feet; "base of rocky cliff"; October 29, 1925; collected by R. A. Stirton.

Characters.—A member of the typical subgenus *Peromyscus*. Size medium (average length, 197 mm.; tail, 95; hind foot, 23.7; greatest length of skull, 29.8). Color ochraceous buff, with sometimes (as in the type) a hint of ochraceous tawny, and with a large and widely distributed admixture of dusky hairs, giving the species a richer and much darker average tone than is found in the somewhat similar *Peromyscus banderanus angelensis* Osgood in like pelage. Orbital ring narrow and inconspicuous, and whisker patches only weakly indicated, or absent. Pectoral spot sometimes present, as in the type, but more frequently absent. Tail about equal to head and body, or a trifle shorter; heavy, distinctly bicolor, and conspicuously furred, in marked contrast to the nearly naked tails of most

¹It is a privilege to name this species for Mr. R. A. Stirton, whose untiring energy has been the outstanding factor in bringing together a comprehensive collection of Salvador mammals.

of the truly tropical species of the genus; hair and annulation scales dark brown or dusky above, contrasted with yellowish white below; annulations nearly concealed but approximately 15 per cm. at middle. Ears moderate (about as in the *boyllei* group). Hind foot largely or entirely white and thinly haired; sole naked nearly or quite to the calcaneum along a narrow median strip. Claws short and sharply curved. Pelage moderately short and rather harsh.

Skull.—Of medium size and smoothly-rounded contours. Rostrum fairly heavy, but not long. Nasals broad, generally ending somewhat abruptly in a truncate posterior suture. Supraorbital border flat and very sharp-angled, with the extreme edge sometimes flaring slightly upward in an incipient ridge, but never definitely beaded. Interorbital constriction not excessive (5.0 mm.). Braincase rather narrow and smoothly-rounded, neither flat, nor unduly high, and not produced posteriorly. Palatine foramina of moderate length, but relatively rather wide from center to posterior end. Shelf of bony palate short. Audital bullae small. Accessory cusps present, but not strongly developed. Maxillary tooth row very weak and short (4.1 mm.). Last upper molar exceedingly weak.

Measurements of type.—Total length, 190 mm.; tail, 100; hind foot, 24; ear, 15. Skull: greatest length, 29.6; zygomatic breadth, 14.7; interorbital constriction, 5.0; length of nasals, 11.7; shelf of the bony palate, 4.5; palatine foramina, 5.6; maxillary tooth row, 4.0 (very worn).

Range.—Tropical Zone, near sea level, on the Rio Goascoran, and about Lake Olomega, El Salvador.

Remarks.—Systematically, its combination of characters has prevented me from associating *stirtoni* closely with any of the established species. It probably belongs at the end of the *mexicanus* group, with the species *banderanus* and *yucatanicus*.

Specimens examined.—El Salvador: Department La Union: Rio Goascoran, 13° 30' N., the type and 7 topotypes; Pine Peaks, Volcan Conchagua, 6. Department San Miguel: Lake Olomega, 2. Department Morazan: Divisadero, 1. Total, 17.